REMARKS

By the above amendment, claims 1-18, under consideration, have been amended to clarify the features thereof in light of the rejection of claims under 35 U.S.C. §112, second paragraph, and the Examiner's comments concerning the claims.

At the outset, applicants note that claims 1-18 are directed to a method for processing a specimen using a plasma and the method utilizes the apparatus as illustrated in Fig. 1 of the drawings, for example, and as described at pages 16-35 of the specification.

Referring to claim 1, as amended, such claim now recites a method for processing the specimen using the plasma comprising the steps of generating a plasma as represented by the plasma 71 in the processing chamber 86 in which a specimen as represented by the wafer W, as illustrated in Fig. 1, is disposed, wherein the specimen is processed with the plasma generated in the processing chamber. The processing steps as recited in claim 1 include an irradiation step for projecting and scanning a light beam into the processing chamber through an observation window 10 of the processing chamber. It is noted that as described at pages 17-19 of the specification, the present invention includes a laser illumination optical system 2000 having a laser light source 12 which emits an S-polarized beam to an AO modulator 14, wherein the intensity of the light beam is modulated by a desired frequency as provided by the oscillator 13, and the intensity-modulated S-polarized beam is focused by a focusing lens 18, reflected by a polarizing beam splitter 24, converted into a circularly or elliptically polarized beam by a wavelength plate 26, subsequently reflected by a Galvano mirror 25, and guided or projected to the inside of the processing chamber through the observation window 10, as described at pages 17-19 of the specification. It is noted that the Galvano mirror 25 is rotated to scan the circularly or elliptically polarized beam in a plane parallel to the

plane of the wafer W. Claim 1, as amended, also recites a detection step for detecting a light of the projected light beam which is reflected from an inside wall of the processing chamber, the light being detected by separating a light component from light emanated from the plasma and light reflected from the inside wall by use of a spectroscope as described at pages 26-28 of the specification, for example. As described therein, a major portion of the circularly or elliptically polarized beam that hits the inside wall of the plasma processing chamber is reflected and since the major portion of the reflected light is a circular polarization component corresponding to a specular reflection component, by the passing through the wavelength plate 26, it becomes a P-polarized beam which passes through the polarizing beam splitter 24 and travels toward the beam splitter 27, wherein a part of the P-polarized beam is reflected at the beam splitter 27 and is focused on the entrance facet of the reflected-light detecting optical fiber 33b by an imaging lens 31b as described at pages 26 and 27 of the specification.

As described at pages 27 and 28 of the specification, the reflected-light detecting optical fiber 33b will detect the reflected light (scattered light) from the inside wall of the plasma processing chamber and the part of the plasma emission of strong emission intensity. However, as described in the first full paragraph at page 28 of the specification, since the exit facet of the reflected-light detecting optical fiber 33b is coupled to a spectroscope 34b, such as a monochromator and interference filter each of whose wavelength is set to the wavelength of the laser light source 12, only a component of the wavelength of the reflected light from the inside wall is separated from the plasma emission in terms of the wavelength by the spectroscope 34b and then is subjected to photoelectric conversion by a photoelectric conversion device 35b. It is noted that claim 1 recites further the feature of a signal processing step for obtaining information of the state of contamination of the inside wall of the processing chamber, by processing a signal obtained at the detection step. As

described at pages 28-31 of the specification, for example, the detected signal that has been subjected to photoelectric conversion is amplified by an amplifier 50b, synchronously detected by a lock-amplifier 51b using a rectangular wave signal of a frequency and duty ratio outputted from the oscillator 13 that has been used for intensity modulation of the laser light, extracting the reflected light (scattered light) component reflected from the inside wall from the detected signal, with an output of the lock-in amplifier 51b being sent to a computer which sends a scanning signal to the Galvano mirror 25 and displays a signal that indicates the status of contamination of the inside wall in the display in the manner as illustrated in Fig. 13, for example. Claim 1 now recites the features of "a detection step for detecting a light of the projected light beam which is reflected from an inside wall of the processing chamber, the light being detected by separating a light component from light emanated from the plasma and light reflected from the inside wall by use of a spectroscope; and a signal processing step for obtaining information on a state of contamination of the inside wall of the processing chamber, by processing a signal obtained at the detection step" which features are clearly supported by the aforementioned description in accordance with 35 U.S.C. §112. Thus, applicants submit that claims 1-11 which have been amended taking into consideration the points raised by the Examiner, should be considered to be in compliance with 35 U.S.C. §112, second paragraph.

Applicants note that independent claim 12 has been amended in a similar manner to that of claim 1, and claim 12 is also directed to the method of processing a specimen as illustrated in Figs. 1-13 of the drawings of this application, for example. As described with respect to claim 1 and the apparatus of Fig. 1, claim 12 recites the steps of generating a plasma, processing the specimen with the plasma and that the step of processing includes projecting a light beam into the inside of the processing chamber through an observation window. Claim 12 differs from claim 1

in reciting the features of splitting light reflected from the inside of the processing chamber in response to the projected light beam and passed through the observation window, obtaining information on suspended foreign material in the processing chamber by detecting one of the split light, and obtaining information on a state of contamination of an inside wall of the processing chamber by detecting the other of the split light. As described above with respect to the features of claim 1, the obtaining of information on a state of contamination of an inside wall of the processing chamber is effected by detecting light passing along the optical fiber 33b and other elements thereof, as described in the specification at pages 26-35, for example. As previously described, reflected light in response to the projected light passes through the observation window 10, the wave plate 26, the polarizing beam splitter 24 and the a portion of the reflected light is reflected by beam splitter 27 onto an entrance facet of the optical fiber 33b. As further described in the specification and the paragraph bridging pages 20 and 21 of the specification, the circularly or elliptically polarized beam guided or projected into the inside of the plasma processing chamber is scattered by suspended foreign material 72 in the plasma, and among the foreign-material scattered light rays, the backward scattered light rays propagate on the same optical axis as that of the projection light beam in a reverse direction so as to pass through the observation window 10, be reflected by Galvano mirror 25 and travel toward the polarizing beam splitter 24. As described above with respect to the features of claim 1 concerning obtaining information on a state of contamination of an inside wall of the processing chamber, a portion of the reflected light after passing through the polarizing beam splitter 24 is reflected by the beam splitter 27 onto the entrance facet of the optical fiber 33b. The beam splitter 27, rather than reflecting all of the light received from the polarizing beam splitter 24, as described at page 21 of the specification, passes a portion of the reflected light from the inside of the processing chamber therethrough and converges the same to

an entrance facet of a foreign-material scattered light detecting optical fiber 33a by an imaging lens 31a as shown in Fig. 1 of the drawings of this application. Thus, as recited in claim 12, light reflected from the inside of the processing chamber in response to the projected light beam and passed through the observation window is split so that one split portion is directed to the entrance facet of the optical fiber 33b and another split portion is directed to the entrance facet of the optical fiber 33a, and passed to a spectroscope 34a as described at page 22, so as to obtain information on suspended foreign material in the processing chamber. As described at page 22, the information on suspended foreign material is obtained by way of the optical fiber 33a while information on the state of contamination of the inside wall of the processing chamber is obtained by way of the optical fiber 33b and elements associated therewith, noting that the optical fibers 33a and 33b receive different split portions of the reflected light. By the present amendment, claim 12 and therewith its dependent claims have been amended to clarify the features thereof in a manner which is considered to be in compliance with 35 U.S.C. §112, second paragraph.

As to the rejection of claims 3-4, 6, 9-10 and 12-18 under 35 U.S.C. §112, second paragraph, as being indefinite, this rejection is traversed insofar as it is applicable to the present claims, and reconsideration and withdrawal of the rejection are respectfully requested.

As discussed above, the independent and dependent claims have been amended to clarify the features thereof and to utilize language considered acceptable by the Examiner, with the features as now being claimed being clearly described in the specification, as pointed out above. Thus, applicants submit that all claims of claims 1-18, under consideration, should now be considered to be in compliance with 35 U.S.C. §112, second paragraph.

As to the rejection of claims 1-18 under 35 U.S.C. 103(a) as being unpatentable over Nakano et al (11-3300053) or Nakada et al (11-251252) and

Bennett et al (JP 03-147317 or US 5,367,139) in view of Katsuyama et al (11-340196), this rejection is traversed insofar as it is applicable to the present claims, and reconsideration and withdrawal of the rejections are respectfully requested.

As to the requirements to support a rejection under 35 U.S.C. 103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under §103 to establish a prima facie case of obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Furthermore, such requirements have been clarified in the recent decision of In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002) wherein the court in reversing an obviousness rejection indicated that deficiencies of the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge". The court pointed out:

> The Examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is immaterial to patentability, and could not be resolved on subjected belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination

> of references, simply to "[use] that which the inventor taught against its teacher."... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion. (emphasis added)

In setting forth the rejection, the Examiner has recognized that translations of all applied Japanese references have not been received by the Examiner, and therefore, the Examiner relies on English language abstracts of Nakano et al and Nakada et al with the Examiner suggesting that splitting and separating language may be considered to read on filtering out light from other sources, which applicants submit is not a proper interpretation, which is different from extracting "components". The Examiner recognizes that neither Nakano et al nor Nakada et al's abstracts have teachings on monitoring chamber wall contamination nor explicit teachings on using the monitored results of particulate contaminants for anything. Thus, applicants submit that in relation to the recited features of independent claims 1 and 12, neither Nakano et al nor Nakada et al disclose or teach in the sense of 35 U.S.C. 103 "a detection step for detecting a light of the projected light beam which is reflected from an inside wall of the processing chamber, the light being detected by separating a light component from a light emanated from the plasma and light reflected from the inside wall by use of a spectroscope; and a signal processing step for obtaining information on a state of contamination on the inside wall of the processing chamber, by processing the signal obtained at the detection step" (claim 1); nor "splitting light reflected from the inside of the processing chamber in response to the projected light beam and passed through the observation window; obtaining information on suspended foreign material in the processing chamber by detecting one of the split light; and obtaining information on a state of contamination of an inside wall of the processing chamber by detecting the other of the split light" (claim 12); nor the recited features of the dependent claims of claims 1 and 12. Thus, applicants submit

that all claims under consideration patentably distinguish over Nakano et al and Nakada et al, irrespective of the contentions of the Examiner.

As to Bennett et al and Katsuyama et al, irrespective of the contentions by the Examiner, such references also fail to disclose or teach the above quoted features of independent claims 1 and 12, which are not disclosed or taught by Nakano et al and Nakada et al. Thus, irrespective of the contentions by the Examiner, since none of the cited art disclose or teach the claimed features for obtaining information on a state of contamination of the inside wall of the processing chamber by processing a signal obtained at the detection step which includes detecting a light of the projected light beam which is reflected from an inside wall of the processing chamber, which light is detected by separating a light component emanated from the plasma and light reflected from the inside wall by use of a spectroscope, as recited in independent claim 1, or by splitting light reflected from the inside of the processing chamber in response to the projected light beam and passed through the observation window so as to obtain information on suspended foreign material in the processing chamber by detecting one of the split light, and obtaining information on the state of contamination of the inside wall of the processing chamber by detecting the other of the split light, as recited in independent claim 12. Irrespective of the interpretations given by the Examiner, such features as recited in independent claims 1 and 12 are not disclosed by any of the cited art taken alone or in any combination thereof, such that applicants submit that independent claims 1 and 12 and the dependent claims patentably distinguish over the cited art in the sense of 35 U.S.C. 103 and should be considered allowable thereover.

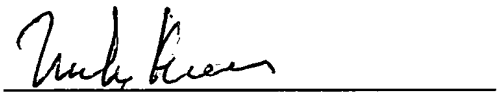
With respect to dependent claims 2-11 and 13-18, applicants note that these dependent claims recite further features in terms of the method of this invention and such features are not disclosed or taught in the cited art, such that all claims under

consideration patentably distinguish over the cited art in the sense of 35 U.S.C. 103 and should be considered allowable thereover.

In view of the above amendments and remarks, applicants submit that claims 1-18, under consideration, should be considered to be in compliance with 35 U.S.C. §112, second paragraph, and that the independent and dependent claims recite features not disclosed or taught in the cited art, such that all claims should now be in condition for allowance. Accordingly, issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (501.41175X00) and please credit any excess fees to such deposit account.

Respectfully submitted,



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